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Some Results of Breeding Moths of the Genus Haploa Hübner.

By FRANK H. FOSTER, Claremont, N. H.

(Continued from March number.)

As the moths emerged I isolated five pairs without attempting any selection, in as many different cages, and obtained fertile eggs from two of the females.

These two pairs of parents, after the eggs were laid, were killed, mounted and labeled so as to be identified with their progeny. The parents will be referred to as pair No. 1 and pair No. 2. They are represented on the accompanying plate by Figures 1 and 2 and Figures 11 and 12 respectively.

The female of pair No. 1 laid 225 eggs. The female of No. 2 laid 275 eggs.

The two lots of eggs and the larvæ obtained from them were kept confined throughout in separate breeding cages and great care taken to avoid any chance commingling. In view of the remarkable results obtained from one of these pairings and doubts that might arise as to possibility of errors I will state that the progeny of these two pairs were the only Haploa larvæ I had at any time during their development. (For detailed

description of egg, larval stages, etc., see appendix to this article).

The larvæ developed very unevenly in both broods after the second month. In October many had pupated, while others were not half grown, and such as had not then reached the final larval strge were placed in a bed of *Cynoglossum* in my garden in the hope that they would hibernate there and be found in the spring. A classification of the imagos of both broods follows.

PROGENY OF PAIR No. 1. 17 ♂—25 ♀.

Division A.

6 ♂ 9 ♀.—These fifteen examples, a little more than one-third the whole number bred, had deep yellow secondaries, yellow abdomens and yellow suffusion of under surface of all the wings. The proportion of yellow males to whole number of males is about the same as the proportion of yellow females to whole number of females. These yellow-winged progeny divide into two distinct groups by the difference in the brown markings of primaries.

Group 1—3 ♂, 5 ♀.—One male and one female of this group are represented by Figs. 7 and 8 of plate. These vary but little among themselves. The tendency toward definition of apical and pre-apical spots is, as shown by the figures, slightly more apparent in the females.

Group 2—3 ♂, 4 ♀.—These are all alike, and one pair is shown by Figs. 9 and 10 of plate. They are like all the *clymene* I have seen, though I have some specimens of *clymene* of unknown parentage in which the secondaries are a little deeper yellow.

Division B.

11 ♂ 16 ♀.—All the moths in this division resemble parents in having white secondaries with a suspicion of yellow tinge. All have white abdomens and under side of all the wings white, or as nearly so as in ordinary examples of *confusa* and *lecontei*.

These twenty-seven moths show so many variations in pattern of primaries that subdivision is not as easy as in the case of the yellow-winged group, but, utilizing the character most widely varying, they may be divided into two groups, viz.:

Group 1—9 ♂, 4 ♀.—These have the oblique brown band extending from above and within inner angle of primaries toward apex, unbroken or nearly so, and thus more nearly resemble the ♂ parent. Figs. 3 and 4 represent this group. The females have the median white spot less deeply incised on its outer end than the males.

Group 2—2 ♂ 12 ♀.—These have the oblique band obsolete, or at most represented by a projecting spur of varying form at base, and thus approach more nearly the ♀ parent. Figs. 5 and 6 are from this group. Variation is toward greater fusion of the white spots and obsolescence of the brown. One female is practically identical with Fig. 3 of Lyman's plate, above referred to, except for outer oblique band being obsolete save for a spur at base. The other females in this group show gradual approach to this extreme from Fig. 6 of accompanying plate.

Of this whole brood of moths those in Division A cannot be said to approach more nearly to one parent than to the other. Of the twenty-seven in Division B thirteen more nearly resemble ♂ and fourteen the ♀ parent. The influence of each parent would thus appear to be about equal, so far as color and markings are concerned. Each sex, however, shows a strong tendency to follow the parent of the same sex. Thus 82 per cent. of the ♂ ♂ more nearly resemble the ♂ parent. Seventy-five per cent. of the ♀ ♀ more nearly resemble the ♀ parent.

PROGENY OF PAIR No. 2. 19 ♁—21 ♁.

The chief difference between the parents of this brood (Figs. 11 and 12) is in the shape of the median white spot on primaries, which in the ♁ is *convex* on outer margin and in the ♀ *concave*. The ♀ also shows tendency toward fusion of the white spots. The differences among the progeny were not such as to admit of a classification into fairly distinct groups, as was the case in the brood above described. While no individuals reproduced the pattern of male parent exactly the general tendency of each sex to follow the parent of the same sex was quite as obvious as in the progeny of pair No. 1. A great proportion of the males were of the typical *confusa* form, and the widest departures from the normal were in the direction of

melanism, while among the females the great proportion had the median white spot simply concave on its outer margin instead of deeply cleft, and the widest departures from normal were in the direction of albinism, as shown by fusing of the white spots. Most of the moths of this brood were like Figs. 13 and 14. In no instance was any tendency toward *clymene* apparent either in marking or color of wings or body.

A tabulation of the results of the examination of one hundred moths, including all those bred from eggs (excepting the yellow-winged progeny of pair No. 1) and those bred from larvæ taken at large, was made in order to discover the relative variability of the sexes, The moths were examined for eleven different variations in markings. The general result was that in respect to variations toward melanism, such as complete subdivision of median white spot of primaries and presence of brown spots on secondaries, a much larger proportion of males than females showed the variations, while among individuals showing tendency toward albinism, such as fusion of white spots on primaries and disappearance of the brown spot or pair of spots at summit of collar, the females greatly preponderated. The tendency toward fusion of the spots was greatest in the apical and pre-apical region of primaries and decreased toward the base of wing.

To summarize the results above recorded :

1. Haploa larvæ indistinguishable among themselves, taken from one restricted locality have produced imagos ranging by insensible degrees from typical *confusa* to typical *lecontei* and even to *lecontei* var. *militaris*, with *confusa* as the dominant form.

2. Larvæ taken with the above in the proportion of about one to five or six, distinguishable by color of hairs, and only in the last stage have produced *clymene*.

3. One pair of parents nearer to typical *confusa* than to any other recognized specific or varietal type, and varying little between themselves, have produced progeny among which are forms referable respectively to *confusa*, *clymene* and *lecontei* as well as intergrades.

4. One pairing between ♂ of typical *lecontei* pattern and ♀

intermediate between typical *lecontei* and typical *confusa* produced progeny in which a large proportion were like ♀ parent, none exactly like ♂ parent, some were like typical *confusa*, and none showed any tendency toward *clymene*.

5. The tendency is marked for the males to resemble the male parent more closely than the female parent, and for the females to resemble the female parent.

6. A tendency toward sexual dimorphism is apparent, the males varying toward greater predominance of the brown and females toward greater predominance of the white.

7. The most variable markings are those on outer half of the primaries.

The above results would appear to establish the specific identity of *lecontei* with *confusa*. To maintain their distinctness one must draw an arbitrary line across a series of specimens, grading insensibly from one to the other, and there would seem to be no better reason for drawing such a distinction between *confusa* and *lecontei* than between *lecontei* and *militaris*, to which latter no one gives more than varietal rank. If any further demonstration were needed than such a series of intergrades furnishes the fact of both forms, *confusa* and *lecontei*, breeding from same parents and being indistinguishable in the larval stages would appear to establish the merely varietal rank of *confusa*.

One other question is raised not so readily capable of being decided upon the evidence thus far brought out. What interpretation shall be given to the appearance of *clymene* in a brood reared from *confusa* parents?

It is obvious that the results may be accounted for upon two different theories.

1. That *clymene* is not a true species, but a form likely to arise in any brood of *lecontei* var. *confusa*.

2. That *clymene* is a true species, and that its appearance among the progeny of *confusa* parents is due to hybridization in a previous generation.

Until someone has bred *clymene* through all its stages and from several pairs of parents, it is obvious that the question of its specific rank cannot be completely settled and, therefore,

the question as to which of the above two theories is correct must be left open.

With a view to learning what, if any, light would be shed upon this problem by the work of those who have experimented with hybridization of Lepidoptera, I have examined with much interest an article by M. A. Dixey in Science Progress (London and Boston) for April, 1898, pp. 185 to 202, entitled "Some Recent Experiments in Hybridization," which contains a review and summary of the published results of experiments of Dr. M. Standfuss, of Zürich. Also an article by James William Tutt in Trans. Ent. Soc. of London, 1898, pp. 17–42, entitled "Some Results of Recent Experimens in Hybridizing *Tephrosia bistortata* and *Tephrosia crepuscularia*."

Both articles deal chiefly with direct hybrids or "half bloods," and both writers agree in stating that hybrids are, as a rule, infertile *inter se*.

In the former article many instances of direct crossing of species are given, and a few of back-crossing between hybrids and one of the parent species. In such back-crossings where the progeny were three-fourths one species and one-fourth another as to their hereditary elements, no instance is cited of the appearance among the progeny of any individuals exactly reproducing the appearance of the species whose part in their parentage was one-fourth, the admixture of blood showing only in a modification of the characters of the predominant parentage.

In the latter article one instance only of back-crossing is given and a similar result recorded, *i. e.*, no example appeared in which the characters of the species supplying one-fourth the hereditary elements were reproduced.

In the first mentioned article instances of crossing of *Callimorpha dominula* L. ♂ with ditto var. *persona* Hbn. ♀ are given, the resulting progeny of which were "very variable in the perfect state," but "bore on the whole a closer resemblance to *C. dominula* than to var. *persona*."

Standfuss lays down the rule that "where the normal form of a species is crossed with a gradually formed local race of the same species the result is a series of intermediate forms."

If hybridization has entered into the parentage of my pair No. 1 it was obviously in a prevous generation.

The parents being so nearly alike would seem to preclude the theory of one being a pure blood *confusa* and the other a hybrid between *confusa* and *clymene*. If both are direct hybrids between *confusa* and *clymene*, normal fertility would not be expected unless the specific distinctness of *clymene* and *confusa* be abandoned.

It is possible that the results might be due to interbreeding among the progeny of a "back-crossing," but I have not been able to learn of any observed case of this sort.

We seem thus to get no further than to establish the improbability of the parents of this brood being direct hybrids. It is greatly to be desired that someone should breed from *clymene* parents several series of moths. Until that has been done it seems idle to speculate further upon the parentage of pair No. 1.

I wish to acknowledge my indebtedness to Mr. Arthur C. Bradley, of Newport, N. H., and Mr. William L. W. Field, of Milton, Mass., for many helpful suggestions and the loan of books, and to Dr. Harrison G. Dyar for permission to quote his most recent views on the classification of this genus.

APPENDIX.

Life history of **Haploa lecontei** var. **confusa** Lyman.

Egg.—Shaped like a sphere, flattened at base. The flattened area is slightly concave, and in diameter about two-thirds the diameter of the egg. Diameter of egg .60 mm. The surface under a low power lens appears smooth and polished. Color when laid greenish yellow. No change of color apparent until shortly before hatching, when the dark head of embryo may be discerned at the summit of the egg through the transparent shell. The eggs are deposited on under side of leaves of food plant, sometimes scattered but usually thickly sprinkled. Not placed in contact with each other as a rule and without regularity of arrangement.

Three lots of eggs I have had under observation were all from females bred in confinement, from hibernated larvæ taken at large in May and were laid between June 29th and July 4th.

This is probably somewnat earlier than they would have been laid in a state of nature, as I observed eggs in the field on July 23d.

Duration of egg stage eight or nine days.

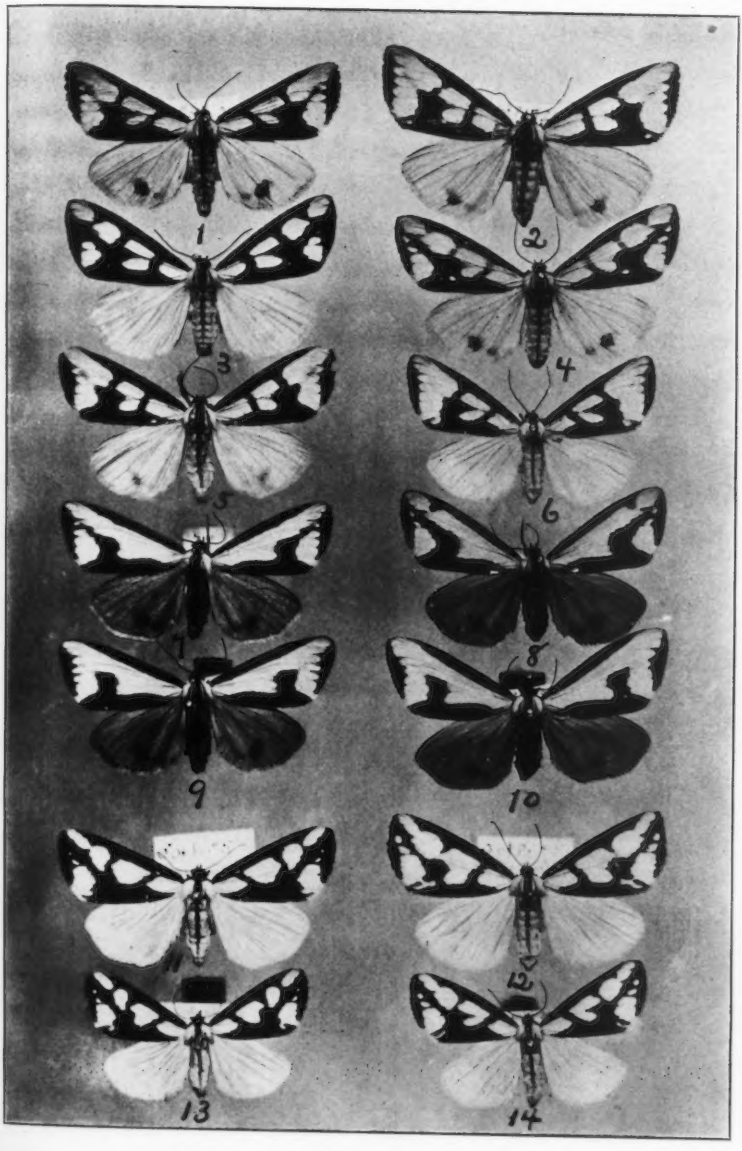
Larva.—Stage I. Length 1.6 mm. when newly hatched. When three days old color is light green; head black with a few scattered hairs or bristles. Prothoracic plate nearly black, not so long as the width of head. The tubercles characteristic of the family are present, their color contrasting with the greenish ground color.

First moult passed in five days.

Stage II. Length three or four mm. Color changed to gray, otherwise much as in Stage I. No longitudinal stripes yet apparent. Larvæ spin down by a thread when disturbed. During first and second stages the larvæ feed from the under side of the leaf on the parenchyma alone, leaving the epidermis of the upper side and the veins intact. Duration of second stage five days.

Stage III.* Length seven or eight mm. Head shining black with few hairs or bristles. Body above with a light bluish drab dorsal stripe, and a narrower subdorsal line of same color separated by a dull black line. A similar dull black line runs between the subdorsal drab one and the lateral yellow stripe. The latter is conspicuously creased with black. A subspiracular line of a pale yellow also creased with black and indistinctly connected by broken lines and spots with the upper yellow stripe. Prolegs with a blackish patch outwardly. Ventral and inner side of prolegs pale flesh color with a few dark dots. The longitudinal lines are quite even in width throughout, but the edges are irregular and broken. Tubercles black, and from each radiate about twenty stiff hairs of moderate length. Hairs blackish except on subspiracular tubercles where they are lighter colored. Duration of third stage nine to fourteen days. Growth quite slow. Larvæ in this stage eat oval holes quite through the leaves from below,

* See Lyman's description, Can. Ent., 1887 (vol. xix, p. 186). His description of *confusa* larva five-sixteenths of an inch long corresponds to Stage III.



HAPLOA (FOSTER).

but do not, as a rule, eat upon the edge of the leaf until they are short of food.

Stage IV. Much as in stage three, except that the dorsal line is yellow instead of drab. Growth very slow. Length eleven or twelve mm. Duration of this stage not accurately observed, but probably two to three weeks. In nature some hibernate in this stage and some in the following stage.

Stage V. Coloring and markings as before. Growth slow. Duration of this stage very variable.

Stage VI. Head shining black with a few scattered hairs also black. Clypeus brown, palpi yellow at base, brown at tip. Body deep black. A dorsal yellow stripe about one-tenth the width of body. Edges finely but irregularly indented with black ; usually cut transversely on middle of each segment by black. Color of line sometimes deepening to orange on the middle of the segments. Traces of a subdorsal whitish line consisting of broken and irregular series of spots on the black ground color. A conspicuous lateral yellow stripe above the spiracles, a little wider than the dorsal line, consisting really of a series of irregular linear spots with their length at right angles to the direction of the stripe. This stripe connects below by dots and lines with a substigmatal line, narrower and paler than the upper one, and like it creased with lines of the ground color. Traces of a subventral yellow line on the bases of the legs. Leg plates black. Ventral surface pale gray with a few minute dark dots. Tubercles polished black, those above the spiracles having blue reflections, each giving rise to about twenty radiating stiff short hairs, which are black above the spiracles and whitish below. Length when full fed 28 to 32 mm.

Pupation.—When about to pupate the larva seeks the ground and makes a sort of cell on the surface, underneath the loose debris, which it lines with very cobweb-like silk, making a loose thin cocoon to which small rubbish adheres. The cocoons are often so flimsy as to fall apart of their own weight when lifted. Larval skin is not extruded from the cocoon.

Pupa is shining black 12 to 17 mm. in length, with a thick shell admitting of little or no motion in the abdominal segments.

Cremaster somewhat broader than long; posterior margin convex in outline and thickly set with slender fine hooks.

Food Plant.—Cynoglossum officinale.

EXPLANATION OF PLATE.

Fig. 1. *Haploa confusa* ♂ bred from larva taken at large.
" 2. " " ♀ " " " " " "
" 3 to 10 inclusive. Progeny of moths, Figs. 1 and 2.
" 11. *Haploa lecontei* ♂ (typical form) bred from larva taken at large.
" 12. " *confusa* ♀ bred from larva taken at large.
" 13 and 14. Progeny of moths, Figs 11 and 12.
All in left hand column are males, in right hand column females.

Philampelus elisa (n. sp.).

Description of a new species of Philampelus from Mexico.

By ELLISON A. SMYTH, JR.
Va. Polytechnic Institute, Blacksburg, Va.

(See Plate IV.)

About the size and with the general pattern as in *pandorus*, coming nearest that species, and between it and *eacus* Cr., color of upper surface a clear dark green, less olive than *pandorus*. Submedian patch on inner margin of anterior wings is concave towards base of wing, and is, on the concave line, sharply darker than rest of patch, and there is a dark line within same patch anteriorly. The usual clear space in middle of wing is ashy grey-green, with no sign of rose. Medio-central and posterior nervules creamy, not rosy as in *pandorus*. Discal spot wanting. On fore costal margin, midway between base and apex of wing, is a dark green, distinct semicircle, inclosing towards margin a lighter green space; beyond this, towards apex, are several very indistinct crenate lines, the middle one of which is deep green and very distinct; these are obtusely crenate towards base of wing, and acute towards apex, as in *satellitia*. Apical lines distinct, alternate blackish and grey-green, sharply crenate. Posterior wings clear bluish grey at base; black spot towards anal angle much smaller and nearer angle than in *pandorus;* this spot extends into median black band, not separate as in *pandorus*, and the black band fades into the blackish olive margin. Anal angle is olive-green and grey,

with spots and lines patterned as in *eacus*, but no pink or rose color anywhere. Fringe on hind wings light olive.

Ground color of thorax and abdomen (much darker and greener than in *pandorus*) of a clear grey-green. Tegulæ darker, clear green. No dark olive band across abdomen at base of thorax as in nearly all of the allied species. Sides of abdomen marked at base with three black spots (*pandorus* has but one), the first two of which are large and distinct. The double row of triangular green spots on back of abdomen enclose grey-green dorsal space for whole length of abdomen.

Under surface dull smoky-olive with two or three wavy lines; outer margin fore wings lighter. No trace of rust-color or buff.

Distinctive Specific Characters.—Clear green-grey color; entire absence of any buff, pink, or rosy shades; the strongly marked green semicircle cutting fore costæ midway between apex and base; absence of discal spot; and the presence of three pairs of black spots on sides of abdomen at base.

Described from a female caught by Mr. Otis W. Barrett at Cuernavaca, Mexico, and now in my collection. Mr. Barrett wrote me that he saw but two specimens of this species in several years collecting experience in Mexico, and adds: "I was impressed with the value of these two specimens at the very first, and took extra care of them in killing them. They were both fresh, taken within an hour of each other at the same place."

I have named the moth in honor of Mrs. Barrett, who assisted her husband in his collecting in Mexico, thinking it a just compliment to her bravery and zeal in that wild country.

I realize my rashness in venturing to describe as new so notable an example of the well-known genus of *Philampelus*. I have, however, during the past year, examined either by figure, description or specimen, the species known to belong to America, as laid down in Kirby's recent catalogue, and the present species agrees with none of them. If there be anymore recently described, I have not been able to learn of them. I have in my collection ten of the twenty species (?) mentioned by Kirby; namely, *vitis*, *linnei*, *posticatus*, *pandorus*, *eacus*,

licaon Cr., *satellitia*, *anchemolus*, *achemon*, *labruscæ*, nearly all in series and of both sexes, and have had access to figures and descriptions of the others. As an excuse, therefore, for what our editor graphically calls "a head-long plunge into the sea of synonymy," I add hereto a brief comparison with the twenty American species (?) given by Kirby.

Hübner's genus *Dupo*, known as the *vitis* group, is best known by *vitis* and *linnei; hesperidium* is an allied form from Jamaica; *hornbeckiana* of Harris (by Clemens considered a synonym of *vitis*), and *strenua* of Ménétries are both described by Boisduval in full, and both have their fore wings marked on the *vitis* type. Boisduval says of *strenua* that it connects *vitis* and *typhon;* and Butler says of both, "allied to *linnei*." *Typhon* (Klug.), as described by Clemens and by Boisduval, suggests the rosy and brown *P. achemon*, to which Clemens says it is allied. Of this latter, *P. achemon*, there is no need to speak. We might eliminate also *Argeus labruscæ*, *phorbas* and *cappronnieri* as of an entirely different type, too distinct to need any comparison.

This brings us to the *pandorus-satellilia-eacus* group; in this group the large, heavy dark-colored giants *anchemolus* and *licaon* (Cr. nec. Hüb.) may be dismissed without comparison, their size and their browns and violets and pinks making them very distinct.

Posticatus, of Grote (*licaon* of Hübner, nec. Cramer) is about the size of *elisa*, but has the primaries narrower, is brownish buff instead of green, has the inner margin of fore wings at base of the anal angle of hind wings, rosy. Mr. Butler also calls attention to the distinct rose color of secondaries.

Mirificatus, of Grote, to quote, "is allied to *posticatus*, *linnei* and *strenua*, from all differing by the white linear bands on the forewings, and their apical white line, and by the distinctly *white-banded abdomen and tegulæ:* while nearest *posticatus* in appearance of hind wings, it is most dissimilar in markings of primaries, which are more like those of *linnei* in the evenness of the ground color."

Satellitia is altogether larger, heavier and is grey or brown-grey; with the blue-green at base of secondaries like *elisa*, but

is otherwise decidedly different in its whole aspect, lacking the green semicircle on costæ of fore wings, having but one black spot on side of abdomen at base, having a brown bar on top abdomen at base of thorax as in *pandorus*, which is wanting in *elisa* and having at least two discal spots in each fore wing, besides other differences as a long series of both sexes in my collection well shows.

P. fusimacula (Felder) is described by Boisduval as a *Sphinx;* presents a very different pattern in the fore wings, has the hind wings yellow-ochre, with a black median band, and the thorax is entirely green, with a brown-red abdomen.

P. pistacina Bdl. is now considered an *ambulyx* and need not be referred to further ; it is very differently marked and colored from the *pandorus* group of *Philampelus.*

Eacus of Cramer is buffish brown, slightly inclined to olive in fresh examples ; lacks the green semicircle, has but one basal abdominal spot on the brown abdomen and has the discal spot, and usually two, present.

Comparison has already been made with *pandorus* in the description of *elisa.*

This leaves only two species, both of Schausfuss. One of these, *P. vini*, is mentioned in Kirby's list. I have never heard or seen of it elsewhere. Mr. Butler, who constantly refers to Schaufuss, makes no mention of it. Kirby gives it from the "Nunquam Otiosus," p. 19, but no mention is made of such a species on that page or any other in the copy of "Nunquam Otiosus" referred to for me. I know nothing more of it.

P. cissi of Schaufuss is described on p. 19 of the "Nunquam Otiosus." Of this description Butler says "Probably the ♂ of *satellitia*, but so imperfectly described that it is impossible to identify it with certainty." I can only add that the description would apply equally well to almost any one of the *pandorus* and *satellitia* group, and should be void through its vagueness. One sentence seems to offer a tangible difference to *elisa*, i. e., "Capite et thorace utrisque *nec non corpore* in medio griseo-lineatis" (italics are mine). This certainly differs from *elisa* as the figure and my description shows.

I feel confident therefore in the validity of *Philampelus elisa* as a species, and surely all of Mexico is not known yet.

Letters from Thomas Say to John F. Melsheimer, 1816-1825.—I, II.[1]

Philad[a] April 12[th] 1816

Dear Sir

I had the pleasure on my arrival here to receive the box of Insects you sent me in the most perfect order, not an individual of the brilliant assemblage was defaced, nor an antenna or other extremity in any respect mutilated, this was the obvious result of the very careful manner in which they were put np & the attention payed to them on the passage by your friend. I am sorry I was not here at that time to receive him—But with respect to these Insects there has been a mistake between us, they are exactly the same species that your Father sent to me long since both sexes of which I now have in my cabinet (with the exception of a few) in perfect preservation & having the numbers of your catalogue[2] annexed to them—I remember

[1] In presenting the first of these letters to the readers of ENTOMOLOGICAL NEWS, the transcriber feels that they will be a source of interest to all concerned with Entomology, especially American students, by whom Thomas Say is held as the father of that study in this country. A rather full account of his life will be found in Volume VI of this journal. Rev. John F. Melsheimer was the son of the Rev. Fred. Val Melsheimer, and there is no record of his having contributed to the literature of insects. The author of the *Catalogue of the Coleoptera of the United States*, 1853, Friedrich Ernst Melsheimer, M.D., was another member of this truly entomological family, and, I think, represented the third generation in this country, the elder having come to America from Ehrenberg am Neckar, Germany, prior, probably, to the year 1800. They all resided at Hanover, York County, Pennsylvania.

The present transcripts and those that may follow are exact copies of the originals as far as punctuation, spelling, capitalization and abbreviation are concerned; so it may be understood that apparent errors are not due to faulty proof-reading, as the proofs have all been compared with the original manuscripts, which are contained in the library of The Academy of Natural Sciences of Philadelphia.—WILLIAM J. FOX.

[2] Refers to *A* | *catalogue* | *of* | *insects* | *of* | *Pennsylvania.* | By Fred. Val. Melsheimer, | Minister of the Gospel. | Part first. | Hanover, York County: | Printed for the author, by W. D. Lepper. | 1806. As the insects spoken of in the present letters are referred to by number corresponding to those in the work just quoted, their identity is an easy matter to those having access to the book, which, however, is exceedingly rare.

handing you two lists of numbers of Insects referring to your catalogue, one of which I observed to you your Father had sent me & those referred to by the other I requested you to send, it was here the mistake undoubtedly occurred—I have selected of those you sent 12 or 20 to replace such as were injured in my cabinet & the remainder together with some India Insects, I have put up to send to you but I do not know any person in Baltimore to whom I could consign them——

I will make a few remarks on some of the species you sent me——

1—Your Nº 51 is the same with 45 (Ammon) that your father sent me it does not agree with the description of that Insect, "Thorax 3-toothed &c"—with the description of *Janus* I am unacquainted it may probably be that insect—the thorax is certainly unarmed though it is cut down before abruptly & irregularly——

2—Anobium Pertinax differs I find sometimes very much in its depth of colouring, though always brown, yet it is sometimes of a much lighter tint with the eye perfectly black—this may be a sexual difference, my lighter one is I believe a male.

3—The Insect your Father sent me as 294 (is perhaps the 296) it is larger than the Opatrum Clathratum—Black with four rufous macula on the elytra—Your 294 is I have no doubt the right one as it is a scarce insect & that the number is marked as such in the catalogue.

4—694 & 695 are very similar I can discover very little difference in the markings

5—Your 857 is black with a rufous thorax & 3 raised lines on each elytron

Your 856 is the same with your fathers 857 & his 856 is entirely black——

I shall now take the liberty to send you the numbers as referring to your catalogue, of Insects I should be extremely happy to receive—You will observe that I have disposed of them particularly the first few agreeably to Latreille

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There is a copy in the library of The Academy of Natural Sciences of Philadelphia. The use of the words "your catalogue" by Say is probably due to inadvertence, as its author was the elder Melsheimer.—W. J. F.

[Here follows a list of 231 species indicated by number]

Of the several Genera that are included within these numbers your father sent to me all such are are not here enumerated which were all that I sent for at that time, so that all I now want are here enumerated, the remaining families I will trouble you for at a future time——

But you must allow me to recompense you for them, I know well the trouble & expense of collecting, and how precious they are when obtained, particularly new species——

I have already commenced describing & my desire to preserve the names as given by your Father & yourself, renders me the more anxious to receive these numbers——[1]

I shall be very happy to receive any observations you may favor me with upon these very interesting little animals, either with respect to their arrangement, manners & habits, their life & conversation &c

I remain very respectfully

Your Ob,dt Servt

THOMAS SAY.

Philad^{a} May 24th 1816

Rev^{d} Jn^{o} Melsheimer——

I had the honor to write you under date of when I acknowledged with thanks the receipt of the insects you were so good as to send me; & mentioned the mistake that had occurred, the blame for which, I am myself subject to——I wrote at the same time for other Insects which were particularly enumerated in the letter all of them you would oblige me by by sending as early as convenient to yourself to the Care of

"Mr. James Griffiths
at Peale's Museum
Baltimore——for Tho^{s} Say
Philad^{a}

By this Gentleman who has kindly offered himself, we can at any time transmit to each other Insects &c with the most perfect safety as far as his attention can secure them——

I had the pleasure to find a very fine & remarkable new insect the other day on the banks of the Wissahickon a few miles from Philad^{a} it is of that singular genus *Diopsis* of which

[1] Say's first entomological paper appeared in June, 1817.—W. J. F.

but one species has as yet been described, this will form a second——have you ever met with it? It is not half the size of the Ichneumonia & the peduncles of the eyes very short comparitively——I will seek in the same place for a duplicate, & if I am so fortunate as to find one I will send it you with those that are ready for you——

I am about sending to Europe for entomological books, & shall be very happy to receive your opinion as to such as I ought to order——it is certainly of the first importance to a naturalist to know what has been done by others in his particu- science in order that his researches may be directed to proper objects & that he may not do over again what has been better done by his predicessors——I am determined to be as cautious as possible in this respect——I have forgotten the title of the work you shewed me containing criticisms on Latreille's system you would oblige by adding its title to the list——

That you may enjoy health & happiness & length of life for the pursuit of this charming science is the sincere prayer of Your Most obd! Serv!

Thomas Say

Over the Range in a Wagon.

By Prof. and Mrs. A. J. Snyder.

On July 9th, having left Belvidere, Ill., in its morning freshness, we caught the Colorado Special at DeKalb with a fixed and deliberate purpose of reaching Denver, Colorado. During the westward journey we watched as closely as possible the change in bird and insect life, trying to gain, even from the rapidly moving train and in the brief stops at stations, some better idea of those sections in which eastern and western species overlap. Nebraska is said to be the great territory for birds from both sections, but in insect life there seems to be more variety, some western species reaching eastern points, perhaps even beyond Illinois, while a few eastern species have crossed the continent westward bound. In brief observations, *Chrysophanus xanthoides*, or the variety *dione* has been noted, while all other species seen from the train seem ot

be eastern. This season, at Julesburg [just over the line], we found *Cleome* abundant and on its blossoms numerous butterflies. *Pieris protodice*, *Euptoieta claudia* and a *Heliothis*, probably *dipsacens*, were abundant, as well as many smaller moths which the brief stay at the station did not permit us to capture.

At 4 o'clock P.M. of the 10th, we were in Denver on our way to the hotel. Collecting in or near large cities has always proved unprofitable unless enough time could be taken to get outside the limits and to find the good collecting grounds; so our main object here was to outfit for the trip to the mountains. The "we" of this trip consisted of W. E. Snyder, of Beaver Dam, Wis., our two little girls and ourselves.

Having brought letters to two business men residing near Denver who were supposed to be able to aid us in outfitting, our first object was to find one of these parties and secure his suggestions. On the morning of the 11th of July, we met Mr. Charles Combs and with him visited the various stockyards and sales stables in search of an outfit. At Union Stockyards we finally found a team which seemed to answer our purpose. There was nothing handsome about the animals but they were used to the climate and the mountain roads; and, while too old to demand a fancy price, and too ungainly to please the fastidious, were well suited for our purpose. This team we purchased, with an old harness thrown in, for $40. We next obtained a light lumber wagon, second hand, at the same price. This we had altered by extending the sides about eight inches at the top and putting on hoops, over which a canvas cover could be placed. All of these purchases and changes took time, yet it made it possible for us to purchase provisions for the trip, secure a wire mattress [just wide enough to fit on top of the extended box of the wagon and form a comfortable bed], and also do a little sight seeing in Denver.

Toward evening of the 12th of July, we might have been seen driving a gray and bay plug team along the shady side of the business streets of Denver, and a little latter we were at the side entrance of the hotel, hastily piling trunks, collecting material and ammunition into the wagon, then seeking a more retired street and hastening out of the city. We drove some

six miles that evening to a friend's residence in the suburbs. Three of the party that night slept in a bed for the last time in seven weeks, while the other two made tent and rolled up in blankets for the first night in camp. Oh, those Western mosquitos, and the first night out! Whether they belonged to the genus *Anopheles* or were the more common representatives of the geus *Culex* did not worry us, but their bites did, perhaps, more so than at any other time during our journey. In the higher altitudes they never bothered us long after dark as it then became too cold.

The next morning we rearranged our baggage, prepared to leave all our friends behind and strike into the unknown. We were in plain sight of the mountains and on leaving were directed to pass to the right or left of certain peaks, to go to a certain ranch and take the left hand road or go to the second forks of the road, then turn to the left, etc. Our map of Colorado was at a discount from that day on, for no one would advise us to go according to its directions. We had thought of visiting Estes Park, but after a consultation with people who had been over the ground, decided that Routt County was the only place in Colorado and joined the hegira in that direction; for Routt County is the great grass region of Colorado, and we concluded that game and butterflies should seek similar localities, especially as one must cross the range to Routt County, and the summit suggested *Chionobas*.

With light outfit and good teams, hunters drive into Routt County in three days; but our horses were not Arabs, our outfit was not light and one horse proved a Turk. Just before starting we spent a few minutes pursuing the butterflies which were abundant in our friend's dooryard. Here were taken *Lycæna acmon*, *Phyciodes ismeria*, *Colias eurytheme*, *Pyrgus tessellata* and another species of *Pyrgus*, *Pholisora catullus*, *D. archippus*, *V. antiopa*, a few wary Odonata and a few hornets. We may as well remark here that, although we frequently had our friends Tough and Prof. Needham in mind, we were unable to capture a single dragonfly during the trip. To be sure, we saw some, but they were wilder and harder to find than any other game we sought except the sage hen.

It was mentioned that we took considerable time rearranging our outfit, and consequently had a late start, but were finally under way followed by the good wishes of our friends, who assured us that there would be many pleasant features of the journey, and that we would especially enjoy the memory when it was all over. This last expression frequently came back to us when we encoutered hardships and disappointments on the way. Before starting we made a new brake for the wagon, knowing that sometimes in the mountains everything depends upon the strength of the brake. Toward noon we were in the foothills, and about 4 P.M. entered Mt. Vernon Canon, up which we drove several miles until we found a suitable place for a camp. Here we ended our first day's journey, picketed Bay and Gray, as we had named our animals, and were soon enjoying our first real meal in camp—peas, bacon, coffee, bread, butter and cakes. That evening our appetites arrived to continue with us to the end of the trip. This entry was made in one of the note books: "The new stove is a jewel." It was a mere box of sheet iron with a tiny oven, two holes to cook upon and a tiny fire-box; but the tales it could tell of excellent biscuit, fried trout, roast venison, baked potatoes, and grouse-pie, are enough to make an epicure long for a taste. During this day we had seen a few *Argynnis* and many *E. claudia*. Will, or the taxidermist, as we may as well style him from now on, was constantly seeking new birds and singing out their Latin names, Mrs. S. was always on the lookout for new flowers, many of which were beautiful beyond description; the children were interested in all outdoors, and the fourth member of the party was "bugologist," nimrod, camp tender or idler as the occasion demanded. But we were all out to study nature, and our main regret was that our friends could not enjoy it with us.

As we sat about the campfire that night we recalled what we had seen during the day, the *Antolmis grotei* and *Arg. cipris* that we had seen on some large compositæ; the four line chipmunk which we supposed was *Tamias quadrilatus*, but which the taxidermist recently wrote me, "is probably a new species;" the hummingbird upon her nest in a brier patch that we watched for a time and attempted to photograph. That first night in

the wilds! It was some time before we sank into slumber—broken occasionally by the strange wood noises. About 3 A.M. we awoke shivering. A fire was quickly kindled and it was kept roaring until daylight. We were ready and willing to make an early start, but found that we were unfamiliar with our team, for at the first hill Gray stopped as though never to go again. We argued the case but to no advantage; we unloaded; we unhitched and drove a team without a wagon, then rehitched, but still there was no *go;* we applied a tough persuader. Finally, while we were lamenting the situation and debating the advisability of a slow fire under the sphinx-like creature, a team came from the opposite direction and the driver wished to pass but the road was too narrow. He finally came to our assistance with a long lithe whip and Gray soon moved on once more. We learned that Gray needed, in fact, must have, a down hill pull the first thing in the morning if we wished to avoid trouble. Give him an easy start and he was good for all day, but up a steep incline, just after breakfast, there he put his foot down. The next event of importance was the descent of Floyd's Hill, a feat for which none of our friends or enemies had prepared us; our friends because they did not wish to discourage us; our enemies, because they hoped we would never come back. Imagine, if you can, a rocky hill over a mile in length, every step of which seems the jumping off place, yet as one makes the various turns in the road and looks ahead, the descent is found always to be a little less than 90°. One at the reins and one at the brakes, we finally made it, then took a long breath, remembered that home and friends lay beyond that hill and wondered if there was a way around it. The natives assured us there was not. Like the classic writer who crossed the Rubicon, we passed on but wondered what the *mountains* were, if this was Floyd's *Hill*. We were too busy that day managing brake and reins to do any collecting. If there were insects we failed to see them. This was Saturday and late that evening we went into camp on the banks of Clear Creek, just beyond Idaho Springs. Here we spent Sunday resting and writing to friends. Here we enjoyed our first rainstorm in camp, heard the thunder roll about the rocky peaks

and at night slept the sleep of the tired. Thus we were ready for an early start Monday morning. Our way to Middle Park was through Lawson and Empire City, then on and up over Berthoud's Pass. Distances are ever deceptive in the mountains. One rancher said it was seven miles up and three down. We didn't know how far it was to the summit, but toward evening, after winding slowly along an uphill road since about 9 A.M., we came to a little log cabin and decided to camp and let our horses have the enjoyment of a roof over their heads. On the way up some insects were seen, *Phyciodes*, *Chionobas*, *Melaporphyra*, *Chrys. helloïdes*, etc. Mosquitos were thick until about 6.30, then the air became too cold. We decided to spend a day or two in this locality and collect on the summit, which we learned was one and one-half miles away. The following morning the taxidermist sallied forth early, armed for conquest, but returned before 9 o'clock with some birds and pine squirrels. Then the "bugologist" started up the trail. Soon *Argynnis helena* were found in abundance and a short distance farther up it was a pleasure to note the erratic flight of a *Chionobas*. Then the pursuit of these wiley mountaineers began and a dozen or more were captured. The identity of these is not yet settled, but they seem to be *uhleri*. On the summit it was cold and windy, too much so for insects except a few *Melitæa*, so the homeward journey soon began. A few *A. curynome* several *Anthocharis ausonides*, *Pieris venosa* and some *Pamphila* were taken,—seventy specimens in all by 1 o'clock,—including a species of *Chionobas* new to the collector. The mosquitos then had their inning until dark, and the next morning we broke camp and begun the ascent. As the first thing was a pull up hill, Gray was obstinate, and in the midst of the argument the brake broke and came near allowing the wagon to go over the mountain side. We hastily repaired the damage and by 7.30 A.M. were on the summit, over 11,000 feet above sea level and with snow banks near at hand.

(To be Continued.)

MR. H. W. WENZEL has taken in Pennsylvania and New Jersey, upwards of 40 species of Scydmænidæ. Before he became interested in this work there were only about ten species known from this vicinity.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1901.

Improvements in photographic illustrating in entomology are still being made and will doubtless go on until the method becomes perfect. As we have already said, the one great feature attained is mechanically correct maculation and contour. The color-screen and isochromatic plates give fairly correct color values, even for reds and yellows. By exposing a number of plates a perfect negative may be obtained. If the specimens are pinned on little corks, gummed on glass, shadows may be eliminated.

We often have photographs sent us with large unsightly labels showing. Such labels should always be removed before the photograph is made. The great objection to the three color process at present is the expense, but doubtless the cost will be reducted by competition just as it was in the case of the ordinary half-tone. The NEWS desires to continue to maintain a high standard in this kind of work, as it believes in the great future and value to entomology along this line.

Notes and News

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

NICHOLAS KUSNEZOW in speaking of *Libythea celtis* says: "The butterfly in repose exactly resembles a dead leaf, just as many tropical Rhopalocera act, with the famous *Kallima inachis* at the head. The circumstances that *Libythea celtis* makes use of its palpi and antennæ for

simulation of a stalk of a leaf, is very singular, as no tropical "leaf-shaped" butterfly does it. In this respect *L. celtis* is unique. This species inclines forward, stretches its palpi and antennæ, touching with them the leafless twig, and raises the anal angles of the hind wings." It would be interesting to observe whether our species, *Libythea bachmani* has this habit.—H. SKINNER.

THE U. S. National Museum has obtained by purchase the Microlepidoptera of the collection of Anton Schmid and the collection of Dr. Ottmar Hoffmann, with the exception of the Sesiidæ, Psychidæ, Tortricidæ, Tineidæ and Pterophoridæ of Hofmann's collection, which had been sold to Lord Walsingham. The combined collections contain over 15,600 specimens in excellent preservation. All the species are of the European fauna and give the National Museum an excellent representation of that fauna, except in the Sesiidæ and Psychidæ, which were taken from the Hofmann collection and not included in the "Micros" of the Schmid collection. The purchase was made through the kind office of Prof. A. R. Grote, of Hildesheim, Germany. A notice of Anton Schmid will be found in "Berichte des Naturw. Vereines in Regensburg," 1898-1899 and Dr. O. Hofmann in the same journal, and also in the "Illust. Zeitschr. für Ent.," V, 140, 1900.—HARRISON G. DYAR.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist. London, Ont.; March, '01.—**5.** Psyche, Cambridge, Mass., March, '01.—**8.** The Entomologist's Monthly Magazine. London, March, '01.—**11.** The Annals and Magazine of Natural History, London, '01.—**13.** Comptes Rendus. Societe de Biologie, Paris, Feb., 2, '01.—**15.** Biologia Centrali-Americana, parts clx, Dec., '00; clxi, Jan., '01, London. Rec'd. Mar. 14, '01.—**19.** Horæ Societatis Entomologicæ Rosssicæ, xxxiii, 1-2; xxxiv, 3-4, St. Petersburg, '00. Rec'd. March, '01.—**21.** The Entomologist's Record, London, February 15, '01.—**22.** Zoologischer Anzeiger, Leipsic, '01.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, February, '01.—**38.** Wiener Entomologische

Zeitung, xx, 1-2, Jan. 31, '01.—**55.** Le Naturaliste, Paris, '01.—**67.** Entomologiske Tidskrift, Stockholm, xxi, Haft 1, March 9, '00, Haft 2, Aug. 18, '00, Haft 3-4, Jan. 31, '01. All rec'd. Feb. 23, '01.—**69.** Bolletino, Societa Entomologica Italiana, xxxii, Florence. Tr. 1, May 20, '00: Tr. 2, July 31, '00; Tr. 3, Oct. 31, '00. All rec'd. March, '01.—**81.** Biologisches Centralblatt, Erlangen, Feb. 1, '01.—**84.** Insekten Börse, Leipsic, '01.—**119.** Archiv für Naturgeschichte, lxvii, i, 1. Berlin, Dec., '00. Rec'd. Mar. 13, '01.—**136.** Stettiner Entomologische Zeitung, lxi, 7-12, '00.—**146.** The Entomological Student, Philadelphia, i, 5, Oct., '00; ii, 1 Feb. 15; 2, Mar. 15, '01.—**147.** Proceedings, American Association for the Advancement of Science, 49th meeting at New York, June, '00. Easton, Pa., Dec., '00.

THE GENERAL SUBJECT.—Allen, H. A. On an insect from the coal measures of South Wales [*Fouquea cambrensis* n. sp.], fig., Geological Magazine, London, Feb., '01.—**Anon.** Baron M. E. de Selys-Longchamps (portrait), **21.—Brauer, F.** Joseph Mik (portrait), **38.—Chapman, T. A.** *Acanthopsyche opacella*: instinct altered when parasitised, **8.—Fabre, J. H.** Souvenirs Entomologiques Sixième Série Etudes sur l'instinct et les mœurs des Insects. Paris. Delagrave Not dated. Figs. Portrait of author Rec'd. Jan., 1901.—**Haacke, W.,** and **Kuhnert, W.** Das Thierleben der Erde. Berlin, Martin Oldenbourg. To be issued in 40 Lieferungen at 1 mark each, forming when completed three volumes, with 620 text figs., and 120 "chromotypographic" plates. Lieferungen 2-17 rec'd. The animals are grouped according to habitat as forest, plain, human habitations, water and its surroundings, and subsequently geographically.—**Hesse, R.** On the so-called simple eyes of insects, **22,** Jan. 21.—**Houssay, F.** La Forme et la Vie. Essai de la Méthode Mecanique en Zoologie. Paris. C. Reinwald, Schleicher Freres. 1900. 8vo. 924 pp., 782 text figs —**Kellogg, V. L.** Insects and spiders of the Galapagos Islands, **5.—McLachlan, R.** Baron M. E. de Selys-Longchamps, **8.—Ohaus, F.** On an entomological journey to Central Brazil (cont.), **136.—Poulton, E. B.** The influence of Darwin upon entomology, **21.—Radl, E.** On phototropism of some Arthropods, **81.—Schmeil, O.** Text-Book of Zoology treated from a biological standpoint. Translated from the German by Rudolph Rosenstock. Edited by J. T. Cunningham. Part iii. Invertebrates. London: Adam & Charles Black, 1900. 8vo. Air-breathing Arthropods, pp. 307-412, figs.—**Tower, W. L.** Some of the internal changes which accompany ecdysis in insects, **147.—Verrall, G. H.** Names of legs of insects, **8.**

ECONOMIC ENTOMOLOGY.—Chapais, J. C. The pea aphis, **37.—Del Guercio, G.** Observations on a new Coccid injurious to *Citrus sinensis* in Italy and on the mode of immunizing the woody part of plants against the punctures of Coccids in general, and of destroying the latter, figs., 1 pl., **69,** 2.—**Dönitz, W.** On gnats, **84,** Jan. 31. —**Fletcher, J.** Practical Entomology (The spread of typhoid fever by

flies), **4.** **Kellogg, V. L.** The San José scale in Japan, Science, New York, Mar. 8, '01.—**Lampa, S.** *Ocneria dispar*, 1 pl., **67,** 1; Report of the State Entomologist for 1899 [in Swedish]. **67,** 2.—**Lowe, V. H.** Miscellaneous notes on injurious insects, figs. Bulletin 180, New York Agric. Exper. Station, Geneva, N. Y., Dec., '00.—**Noel, P.** The peach aphis, **55,** Mar. 1.—**Plumacher, E. H.** Remedy against mosquitoes [Planting of castor-oil beans], Consular Reports, lxv, No. 246 Washington, Mar., '01.—**Quaintance, A. L.** Insect Notes, 1. pl., 13th Annual Report, Georgia Exper. Station, State College of Agric. and Mechanic Arts, Experiment, Ga., Jan., '01.—**Rivière, C.** and **Lecq, H.** Means of defense to oppose against the Acridians of Algeria, Bulletin, Société Nationale d'Acclimatation de France, Paris, Aug., '00.—**Sanderson, E. D.** Some plant-lice affecting peas, clover and lettuce, figs., **4.** **Sjöstedt, Y.** San José scale, its developmental stages and biology, figs. [in Swedish], **67,** 2.—**Slingerland, M. V.** The palmer-worm [*Yposolophus pometellus* Harr.], figs., Bulletin 187, Cornell University Agric. Exper. Station, Ithaca, N. Y., January, '01.—**Sparkes, C. W.** Locust destruction and use of fungus, The Agricultural Journal, Cape Town, Jan. 17, '01.—**de Vevey, S. A.** Pseudo-parasitism of *Chelifer cancroides* in man; Three observations of erucic stomatitis provoked by the larva of *Liparis chryssorhœa* L., **13.**—**Wilcox, E. V.** Abstracts of recent publications, Experiment Station Record, xii, 6, Washington, '01.

ARACHNIDA.—Cambridge, F. O. P. Arachnida Araneidea, vol. ii, pp. 177-192, pl. xiii, **15,** clx; id, pp. 193-208, pl. xiv [Salticinæ*], **15,** clxi.—**Cambridge, O. P.** Arachnida Araneidea, vol. i., pl. xxxvi, **15,** clx.—**Dahl, F.** Foundation of a scientifically useful collection of spiders, Sitzungs-Berichte, Gesellschaft der naturforschenden Freunde in Berlin, Jan. 15, '01.—**Foa, A.** Do polymorphism and parthenogenesis exist in the Gamasidæ? [Answer to both questions: no.], 13 figs., **69,** 2. **Kathariner, L.** Observations on care of the young in a spider (*Stegodyphus lineatus* Latr.), **81.**—**Leonardi, G.** Natural history of the insect-inhabiting Acarids [1, Wandering forms; 2, Commensals; 3, True parasites], **69,** 1.—**Thor S.** Mites as enemies of ants, Nyt Magazin for Naturvidenskaberne, 37 Bind, 4 Hefte, Christiania, 1900.—**Tragardh, I.** *Nothrus maximus*, a new Oribatid found fossil in the Glossotherium cave and still living in Patagonia, figs., **22,** Jan., 21.—**Trouessart, E.** Description of new species of Halacaridæ, Bulletin, Société d'Études Scientifiques d'Angers, xxix, 1900.—**Tullgren, A.** Two new species of Chelonethi (Pseudoscorpions) from America*, **67,** 2.

PROTOTRACHEATA.—Bouvier, E. L. Characters and affinities of an Onychophore of Chili, *Peripatopsis Blainvillei* Blanchard, **22,** Feb., 4.—**Purcell, W. F.** On the anatomy of *Opisthopatus cinctipes* Purc., with notes on other, principally South African, Onychophora, 3 pls., Annals, South African Museum, ii, 4. London, Dec. 4, '00.

MYRIOPODA.—Verhoeff, C. W. Contributions to knowledge of palæarctic Myriopods, xvii, 2 pls., **119.**

COLLEMBOLA.—Wahlgren, E. On some new Collembola from southwestern Patagonia, 1 pl., **67,** 3-4.

ORTHOPTERA.—Hayward, R. The katydid's call in relation to temperature, **5.—Laurent, P.** Some further notes on *Tenodera sinensis* (Sauss.), 1 pl., **146,** ii, 2.—**Scudder, S. H.** Four new species of *Hippiscus**, **4.—Seiss, C. F.** Notes on *Stagomantis carolina*, **146,** ii, 2.

HEMIPTERA.—Berg, C. Rectifications and annotations to the Synopsis of the Hemiptera of Chile, by E. C. Reed. Anales, Museo Nacional de Buenos Aires, vii, Nov. 22, '00.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pp. 345-368, pls. xx, xxi [Gelastocoridæ, Nepidæ*, Belostomidæ], **15,** clxi.—**Cockerell, T. D. A.,** and **King, G. B.** Notes on *Crypticerya Townsendi* Ckll , fig., **5.—Distant, W. L.** Description of a new species of Cicada from the Bahama Islands, **8.—Gillette, C. P.** Identification of two of Fitch's species, viz., *Deltocephalus melsheimeri* and *Chlorotettix unicolor*, **5.—Gross, J.** Researches on the ovary of the Hemiptera as well as a contribution to the question of amitosis, Zeitschrift für wissenschaftliche Zoologie, lxix, 2, Leipsic, Feb. 15, '01.—**Handlirsch, A.** New contributions to knowledge of stridulating organs in the Rhynchota, figs., Verhandlungen, k.k. zoologisch-botanischen Gesellschaft in Wien, l, 10, Jan. 28, '01,—**Hempel, A.** Descriptions of Brazilian Coccidæ, **11,** Feb.—**Kirkaldy, G. W.** Evolution of our present knowledge of the British Rhynchota, **21. Lugger, O.** Hemiptera or Bugs injurious in Minnesota, figs. Sixth Annual Report of the Entomologist of the State Experiment Station of the University of Minnesota to the Governor for the year 1900. St. Anthony Park, Minn., Dec., 1, '00.—**Macgillivray, A. D.** Cicadidæ: American genera and species, **4.—Mordwilko, A.** On the biology and morphology of plant-lice, fam. Aphidæ [in Russian], parts ii, iii, **19,** xxxiii, 1-2.—**Newstead, R.** On the progress in the study of the Coccidæ, **21.**

COLEOPTERA.—Aurivillius, C. See Lepidoptera.—**Beaulieu, G.** Scarabaeidæ of the Province of Quebec (cont.), **37.—Bradley, J. C.** On the distribution of the Cicindelidæ, **146,** i, 5.—**Browning, G. W.** List of Cicindelidæ taken in Salt Lake Co., Utah, and adjoining counties, **146,** i, 5.—**Castle, D. M.** *Dichelonycha fuscula* [at Philadelphia], **146,** ii, 1.—**Cockerell, T. D. A.** *Cicindela lepida* in New Mexico, **146,** i, 5.—**Crevecœur, F. F.** Notes on the Cicindelidæ of Onaga, Kansas, **146,** ii, 1.—**Davis, C. A.** The distribution of the Endomychidæ, **146,** ii, 2.—**Jakowleff, B. E.** Description of some new species of the family Lucanidæ,* figs., **19,** xxxiv, 3-4 —**Pic, M.** Description of new Coleoptera, **55,** Feb. 1.—**Planet, L.** Monographic essay on the Coleoptera of the genera *Lucanus* and *Pseudolucanus* (cont.), figs., **55,** Mar. 1.—**Raspail, X.** *Melolontha* and its cycles, Revue Scientifique, Paris, Mar. 2, '01.—**Rest, N. E.** Notes on the Cicindelidæ

of Central Pennsylvania, **146,** i, 5.—**Semenow, A.** On a new genus of the family Hydrophilidæ and contributions to the study of morphological parallelism [in Latin and Russian], **19,** xxxiv, 3-4.—**Tower, W. L.** On the origin and distribution of *Leptinotarsa decem-lineata* Say, and the part that some of the climatic factors have played in its dissemination, **147.**—**Tschitscherine, T.** Memoir on the tribe Harpalini; Notes on the Platysmatini of the Museum of Natural History of Paris,* Revision of the subgenus *Bothriopterus* Chaud. (genus *Platysma* Bon., Tsch.), **19,** xxiv, 3-4.

DIPTERA.—Berlese, A. On the modifications of some tissues during the metamorphosis of *Calliphora erythrocephala*, **69,** 3.—**Chagnon, G.** Preliminary studies on the Syrphidæ of the province of Quebec (cont.), **37**; Preliminary list, No. 1, of Canadian Diptera, **146,** ii, 1, 2,—**Hendel, F.** Contribution to knowledge of the Calliphorinæ, **38.**—**Melichar, L.** On the occurrence of *Drosophila ampelophila* in great numbers, **38.**—**v. Röder, V.** *Trichioscelis* n. gen., Dasypogoninæ, Diptera, **136.**—**Speiser, P.** On the Nycteribidæ, bat-parasites of the group of Diptera Pupipara, 1 pl., **119**—**Supino, F.** Observations on phenomena occurring during the postembryonic development of *Calliphora erythrocephala*, 2 pls., **69,** 2; Open letter to Prof. Antonio Berlese [on metamorphotic phenomena in *Calliphora*], **69,** 3.—**Williston, S. W.** Diptera, vol. i, pp. 217-248. [Supplementary; various families*], **15,** clx.

LEPIDOPTERA.—Aurivillius, C. Lepidoptera and Coleoptera collected by Prof. A. G. Nathorst's Arctic Expedition of 1898-9, by the Swedish Expedition to Bear Island in 1899, and by Conservator G. Kolthoff's Expedition to Greenland, 1900. [In Swedish.] Ofversigt, Kongl. Vetenskaps-Akademiens Forhandlingar, 1900, No. 10, Stockholm.—**Dognin, P.** Description of new Lepidoptera, **55,** Feb. 1.—**Dyar, H. G.** Life-histories of North American Geometridæ, xx, **5**—**Fernald, C. H.** A century of Lepidopterology in North America, **21.**—**Godman, F. D.** Lepidoptera Rhopalocera, vol. ii, pp. 557-588, pls. xcix, c, **15,** clx [Pamphilinæ*], id., pp. 589-596, **15,** clxi.—**Hampson, G. F.** The Lepidoptera-Phalænæ of the Bahamas*, **11,** Mar.—**Hilse, O.** Are birds butterfly-hunters?, **84,** Feb. 7.—**Kaye, W. J.** Progress in the classification of the Sphingides during a century and a half, **21.**—**Lagerheim, G.** On the question of the means of defense of plants against caterpillars, **67,** 3-4.—**Moore, F.** Lepidoptera Indica, part xlviii. London, Lovell, Reeve & Co. 1900. Rec'd. Mar. 14, '01. [Vol. iv, pp. 225-260, index, title page, description of plates. Pls. 373-378. Nymphalinæ, group Argynnina.]—**Plateau, F.** Protective resemblance in the chrysalids of Rhopalocera, figs., **55,** Feb. 15.—**Quail, A.** Marginal wing bristles in Lepidoptera, fig., Entomologist, London, Feb., '01.—**Rye, H. B.** New histories in *Hydrœcia*, **4.**—**Schaus, W.** Description of some new species of Heterocera,* **11,** Mar.—**Sich, A.** Illustrations of Lepidoptera, being imprints of impressions, **21.**

HYMENOPTERA.—Emery, C. On the thorax of ants and particularly of the neuters, 14 figs., **69,** i.—**Lagerheim, G.** On *Lasius fuliginosus* Latr. and its fungus culture, **67,** 1.—**Stoyel, A. C.** A curious instance of the labor-saving instinct in the leaf-cutting bees, Transactions of the Hertfordshire Natural History Society, x, 5, London and Hertford, Sept., '00.—**Thor, S.** See Arachnida.

Doings of Societies.

The fourteenth regular meeting of the Harris Club was held at 35 Court Street, Boston, on the evening of February 15, 1901, Mr. Newcomb presiding. Six new members were elected, namely: Miss Denton, Miss Blount and Miss Wiswell, all of Wellesley, Mass.; Messrs. J. H. Herrick of Hudson, Mass., A. J. Lewis of Boston, and Charles A. Osgood of Newtonville, Mass.

Mr. Bolster opened the discussion of "winter collecting" with an account of methods pursued in collecting Coleoptera,—sifting, examination of ant-hills, bark, etc. Mr. Swett told of a harvest of Ichneumonidæ obtained from a pine stump. Mr. Morse exhibited a series of the Orthoptera which may be found in New England during the winter.

Mr. Lowell told of a water beetle, species undetermined, which has lived in an aquarium for three years. Mr. Rogers described the killing of young turtles by water beetles.

Mr. Harvey Mitchell showed a melanic male of *Colias philodice* from Medford, Mass., and an *Argynnis*, supposed to be *myrina*, from Bryantville, Mass., which displayed excessive development of the silver markings of the under surfaces of the secondaries, the interspaces being solid patches of silver.

Mr. Burrison exhibited some butterflies from Yellowstone Park.

W. L. W. FIELD, *Secretary.*

The regular stated meeting of the Feldman Collecting Social was held March 20, 1901, at the residence of H. W. Wenzel, 1523 South 13th St. Thirteen members present. Visitor, Mr. H. Viereck. President Mr. Charles W. Johnson in the chair.

Professor Smith stated that one of the larvæ of mosquitoes

mentioned at the last meeting had changed to the pupa state on March 17th. He also said that his observations upon mosquitoes were made in winter, while those of Dr. Howard were made in summer and on a different species; this might account for the difference in the conclusions to which they arrived.

Mr. Johnson asked if there was any plant life in the water, and Professor Smith stated that there was quite a good deal of organic matter in the pitcher plant when he collected the mosquitoes, and all of the contents was placed in the water. The water had not become foul on account of the lack of plant life.

Dr. Skinner said that many years ago mosquitoes were considered important factors in keeping water pure, but now they are injurious to man as carriers of disease, and the bad probably overbalances the good they do. He spoke about the relation of yellow fever and mosquitoes, and stated that the period between biting and the appearance of the disease was placed at thirteen days. On account of the time taken for the mosquito to become virulent he thought that that the disease might be caused by a protozoan, and not by bacteria.

Mr. Wenzel said that a vessel arrived at this port some years ago with a cargo of rags from an infected district, and the disease was spread through the city.

Dr. Skinner stated that the insects are carried by ships and freight cars to different places, and by biting people would cause yellow fever to appear in districts a long distance from the original source of the disease.

Mr. Johnson stated that it has been proven that some species of mosquitoes carry disease and others do not.

Dr. Skinner said that the water supply of Havana had been made much purer within the last two years, but yellow fever exists as violently as before, and this seems to show that water supplies do not carry the disease as much as has been suppose.

Dr. Skinner exhibited specimens of *Psalidognathus friendii*, a beautiful, large, green longicorn from South America. They came packed in a cigar box with cotton and cut cork, and evidently had not been killed, as the alimentary canal was full of cotton from the head to the latter extremity, from which some

of the cotton protruded. Hunger had evidently caused them to eat the cotton in comparatively large quantities which they could not digest.*

Mr. Fox read a note upon the generic name *Monedula* which had been used for a genus in Ornithology in 1762, and also in Hymenoptera in 1802. As the name used in Ornithology has priority a new one must be used in Hymenoptera, and *Stictia* Illiger, proposed in 1807, was suggested.

A discussion upon priority and pronunciation of scientific names took place and Professor Smith mentioned three names which in England would be pronounced the same way, but on the continent would be given an entirely different pronunciation.

Mr. Johnson spoke about the effect of pith upon insect pins. He received a number of insects from Germany mounted upon pith, and, in looking at the insects recently, found that that part of the pin which had been in the pith was eaten away, and the insects were lying at the bottom of the box. Professor Smith said that if the pith was not perfectly dried it might cause the damage spoken of.

Dr. Skinner asked about the best method of mounting mosquitoes, and Mr. Johnson suggested using small pins or mounting like Coleoptera.

Mr. Bœrner moved that a vote of thanks be extended to Dr. Skinner for the able manner in which he entertained us at the last meeting.

WILLIAM R. REINICK, *Secretary.*

A meeting of the American Entomological Society was held February 28th, Dr. Philip P. Calvert, President, in the chair. Thirteen persons were present. Mr. H. W. Wenzel exhibited his fine collection of *Lampyridæ*, which contains nearly every described North American species. Dr. Skinner exhibited some agave pith from California, and said it was excellent for lining store boxes and boxes for mailing insects. Mr. Wenzel said an objection to its use for permanent collections was the

* On further examination it seemed likely that the cotton had been artificially introduced from the posterior part of the body.

fact that it corroded the points of the pins. Mr. Johnson said palmetto pith would destroy the ends of pins. Dr. Skinner exhibited specimens mounted according to a method devised by Prof. O. B. Johnson of Seattle, Washington. Dr. Calvert gave an account of a bicycle trip he had made during the summer of '98 to the lake region of the southeasern part of New York State and the adjoining region in Pennsylvania. The time was between July 16th and August 5th; twenty-two ponds being visited in search of Odonata. The collecting in the mountainous parts was not particularly good. The most favorable places were found to be Sawkill Pond near Milford, Pa., and in Sullivan County, N. Y., at De Bruce and White Lake. *Enallagma pollutum* was one of the interesting finds, inasmuch as it had been originally described from Florida and subsequently from Maine. The speaker had also taken it at Clementon, N. J. *Enallagma piscinarium* was taken at Silver Lake near the Gap. The difference between this and *geminatum* was pointed out. The collections made were exhibited and Dr. Calvert spoke favorably of this region as a collecting place for the entomologist.

DR. HENRY SKINNER, *Secretary.*

A regular meeting of the Newark Entomological Society was held Sunday, March 10th, at 3 P. M., at Turn Hall, fifteen members and three visitors being present. President Buchholtz presided. Mr. Luccareni was elected secretary to take the place of Mr. Kemp, who will leave in a few days for an extended collecting trip through Arizona. Mr. Stortz reported the capture of *Panagæus fasciatus* at Springfield, N. J., March 3d. The genus *Arsama* was discussed by the members present, and Messrs. Buchholtz, Reinecker, Halterman and Straub exhibited specimens for comparison.

G. A. LUCCARENI, *Secretary.*

We regret to announce the death of Mr. Frederick Clarkson, of New York, a subscriber to the NEWS, who was interested in general entomology.